

## The Tangent Ratio

Date: \_\_\_\_\_

**Trigonometry** - The branch of mathematics dealing with the measurement properties of triangles.

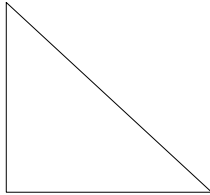
$\theta$  - “theta” - refers to the unknown angle

There are three “PRIMARY TRIG RATIOS” which are SINE, COSINE and TANGENT.

These TRIG RATIOS compare 2 sides of a right angled triangle. By knowing the ratio of the two sides, we can find missing angles and sides and “SOLVE THE TRIANGLE”.

First, we must know how to label the three sides of a right angled triangle using “HYPOTENUSE, OPPOSITE, and ADJACENT.”

EX:



The **TANGENT RATIO** is

$$\text{Tan } \theta = \frac{\text{opposite side length}}{\text{adjacent side length}}$$

$$\text{Tan } \theta = \frac{\text{opp}}{\text{adj}}$$

**Using your calculator:**

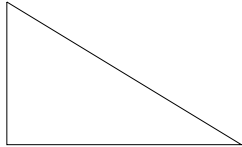
- A.** If you know the degree measure of an angle, the TAN key on your calculator can be used to find the tangent ratio for the angle.

EX:   a)      $\tan 52^\circ =$   
          b)      $\tan 20^\circ =$

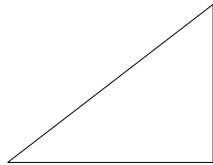
- B.** The  $\tan^{-1}$  key on your calculator can be used to find the degree measure of an angle when given the tangent ratio of an angle.

EX: a)  $\tan A = 1.963$   
b)  $\tan \theta = 0.510$

- EX: A. Find the tangent ratio for angle B, then find angle B.



- B. Find side length m.



- C. Solve triangle PQR.

